

## WHAT IS CLAIMED:

1. An animal model system for artificially inducing a heart arrhythmia, comprising:

an animal test subject having an artificially induced atrioventricular block in the heart of the animal test subject, the anterior descending portion of the coronary artery of the heart of the animal test subject being surgically and/or chemically blocked for inducing a myocardial infarction; said animal test subject having, coupled to a myocardial nerve conduction pathway leading to the left ventricle of the heart, means for stimulating myocardial hyperinnervation in the left ventricle and thereby inducing a heart arrhythmia; said animal test subject further having, coupled to its heart via electrical leads, means for detecting electrical heart signals representative of the induced heart arrhythmia. *excessive stimulation*

2. The animal model system of claim 1, wherein the means for stimulating myocardial hyperinnervation in the left ventricle comprises an osmotic pump for pumping a neurotrophic vector into the myocardial nerve conduction pathway leading to the left ventricle.

3. The animal model system of claim 1, wherein the means for stimulating myocardial hyperinnervation in the left ventricle comprises an electrical lead for administering an electrical current to the myocardial nerve conduction pathway leading to the left ventricle.

4. The animal model system of claim 1, wherein the means for detecting electrical heart signals representative of the induced heart arrhythmia further comprises means for pacing the heart in response to the induced heart arrhythmia.

5. The animal model system of claim 4, wherein the means for detecting electrical heart signals representative of the induced heart arrhythmia comprises an implantable cardioverter-defibrillator (ICD).

6. The animal model system of claim 5, wherein the cardioverter-defibrillator (ICD) further applies techniques to prevent the occurrence of further arrhythmias of the heart of the animal test subject.

7. The animal model system of claim 5, wherein the cardioverter-defibrillator (ICD) <sup>further</sup> applies techniques to prevent the occurrence of ventricular fibrillation of the heart of the animal test subject.

8. The animal model system of claim 5, further comprising a telemetry system for downloading signals from the cardioverter-defibrillator (ICD) representative of <sup>said</sup> detected heart signals and any <sup>technique</sup> response applied by the ICD; and a test analysis system for processing the signals received from the ICD to verify the efficacy of any response applied by the ICD to the heart of the animal test subject.

9. The animal model system of Claim 1, wherein the anterior descending portion of the coronary artery of the heart of the animal test subject is surgically blocked by a ligation of the coronary artery or by wires positioned in the artery through a catheter.

10. The animal model system of Claim 1, wherein the animal test subject is a canine.

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